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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/767,283

01/30/2004

Eiichi Ono

248317US0

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22850 7590 02/06/2007  
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
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EXAMINER

BROADHEAD, BRIAN J

ART UNIT

PAPER NUMBER

3661

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/06/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/767,283	<b>Applicant(s)</b> ONO, EIICHI	
	<b>Examiner</b> Brian J. Broadhead	<b>Art Unit</b> 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

2. Claims 1 through 28 are objected to because of the following informalities: All of the claims try to claim two different embodiments of the same invention. One embodiment includes steering control while the other does not. This has resulted in claims, like claims 11 and 28, that recite limitations that don't really further limit the parent claims because the steering control is optional. The embodiments should be claimed separately.

3. In claim 19, line 3, it appears "or" should be --of--.

4. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

Art Unit: 3661

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

7. As per claims 1-28, the claims recite that the constraint is represented by a formula indicating that no resultant force is generated in a direction orthogonal to a direction of the target resultant force but this is not disclosed. The closest thing disclosed is equation 9 that uses the magnitude of the friction circles in the constraint equation. But the friction circle amount is not equal to the actual tire forces on the tires in the orthogonal direction. Is there an assumption being made? The claims also recite that the constraint includes as parameters a magnitude of critical friction circles. While the equation is disclosed, its explanation is lacking since it is not understood how this can be assumed since actual tire forces don't necessarily correspond to the critical friction circles.

8. As per claims 4, 5, 6, 17, 18 and 19, the claims recite calculating "another physical quantity" but the specification does not disclose another physical quantity. The specification does disclose calculating a second estimate for the angle of the tire force, but this is still the same physical quantity. It is just calculated a different way.

9. Claims 1-28, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Art Unit: 3661

10. As per claims 1-28, the claims recite that the constraint is represented by a formula indicating that no resultant force is generated in a direction orthogonal to a direction of the target resultant force but this is not disclosed. The closest thing disclosed is equation 9 that uses the friction circle value in the constraint equation. But the friction circle amount is not equal to the actual tire forces on the tires in the orthogonal direction. Is there an assumption being made? The claims also recite that the constraint includes as parameters a magnitude of critical friction circles. While the equation is disclosed, its explanation is lacking since it is not understood how this can be assumed since actual tire forces don't necessarily correspond to the critical friction circles.

11. As per claims 4, 5, 6, 17, 18, and 19, the claims recite calculating "another physical quantity" but the specification does not disclose another physical quantity. The specification does disclose calculating a second estimate for the angle of the tire force, but this is still the same physical quantity. It is just calculated a different way.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 4, 5, 6, 13, 17, 18, 19, 26, and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. Claims 4, 5, 6, 17, 18 and 19 recite the limitation "secondary performance function". It is not clear whether this term has a specific meaning and needs to be clarified.

Art Unit: 3661

15. As per claims 13, 26, and 27, the c

16. Claims 13, 26, and 27 recites the limitations "the desired resultant force", "the resultant force acting on the vehicle body" and "the respective wheels". There is insufficient antecedent basis for this limitation in the claim. The claims also recite "the direction of the resultant force acting on the vehicle body as the resultant force of the tire forces of the respective wheels being used as a reference", or some variation of the phrase. This phrase is unclear. It appears it might be trying to recite that the resultant force is formed as a sum of the tire forces on the respective wheels?

17. Claim 18 is rejected for being indefinite. It recites that the another physical quantity satisfies a first approximation formula of a formula defining the constraint. However, the constraint is recited in an earlier claim, that claim 18 depends on, as being two formulas. Is there a third formula being used or is it one of the two previously recited?

***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 1, 2, 3, 8, 11, 14, 15, 16, 21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anwar, 6885931, in view of Nakamura et al.,

US2002/0109402 A1.

20. Anwar discloses calculating a physical quantity which relates to a tire force of each wheel and optimizes an effective road friction of each wheel, based on a target resultant force to be applied to a vehicle body in order to obtain vehicle body motion that a driver desires, and a constraint including as parameters a magnitude of a critical friction circle of each wheel in equations 31-34; calculating, based on the calculated physical quantity relating to the tire force of each wheel, a first control variable for controlling at least one of braking force and driving force of each wheel, or a second control variable for controlling the first control variable and a steering angle of each wheel; and controlling (A) the at least one of braking force and driving force of each wheel based on the first control variable, or controlling (A) the at least one of braking force and driving force of each wheel and (B) the steering angle of each wheel based on the first and second control variables on lines 34-36, on column 1; the constraint is represented by a formula indicating that no resultant force is generated in a direction orthogonal to a direction of the target resultant force, and a formula indicating that a moment around the center of gravity of the vehicle is equal to a desired moment and the constraint is represented by formulae, the number of which is less than that of wheels, or a linearized formula in equation 30, the constraint that no resultant force is orthogonal to a direction of the target resultant force is inherent; the magnitude of the critical friction circle of each wheel is determined based on an estimate or a virtual value of  $\mu$  of each wheel and a load of each wheel in lines 20-25, on column 8; and the steering angle is controlled to be the same for the right and left wheels in figure 1. Anwar does not disclose controlling both braking force and driving force or maximizing grip margin of

Art Unit: 3661

each wheel. Nakamura et al. teach controlling both braking force and driving force and maximizing grip margin of each wheel in paragraphs 4, 14, 20, 167, and 219. It would have been obvious to one of ordinary skill in the art at the time the invention was made to also control driving force and grip margin because such control would prevent deteriorated control at any individual wheel that could cause an instability as stated by Nakamura et al.

### ***Response to Arguments***

21. Applicant's arguments with respect to claims 1- 28 have been considered but are moot in view of the new ground(s) of rejection.

22. The examiner would be very willing to discuss this application and suggests that applicant's representative contact the examiner to schedule and interview if there are any questions about the objections and rejections in this office action.

### ***Conclusion***

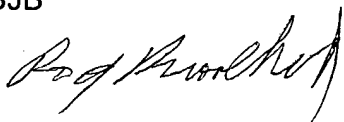
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 571-272-6957. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJB

A handwritten signature in black ink, appearing to read "B. J. B.", is written below the typed name "BJB".